

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

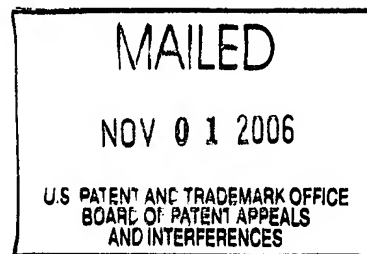
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ALEXANDER E. MERICAS

Appeal No. 2006-2852
Application No. 10/733,443

ON BRIEF



Before HAIRSTON, KRASS, and MACDONALD, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 and 3-5. Claims 2 and 6 have been canceled.

The invention is directed to a performance monitor having plural performance monitor counters (PMCs) and at least one monitor mode control register (MMCR), with each PMC being controlled by the MMCR to pair or group the PMCs so that the overflow from one PMC can be directed to its pair/group. The effective size of the counters can be increased by coupling the PMCs so that overflow from one can be directed to another.

Representative independent claim 1 is reproduced as follows:

1. A performance monitor for monitoring an occurrence of incidences of one or more events related to operation of a processor, comprising:

at least one monitor mode control register; and

a plurality of performance monitor counters operatively connected to said at least one monitor mode control register to count incidences of said one or more events, said at least one monitor mode control register grouping said performance monitor counters so that when one of said performance monitor counters reaches capacity in connection with the counting incidences of a first of said one or more events, a second of said performance monitor counters begins counting subsequent incidences of said first of said one or more events;

wherein the number of events equals X, and the number of performance monitor counters equals Y, whereby said at least one monitor mode control register groups said performance monitor counters into Z groups, wherein $Y/X=Z$; and

wherein when $X < Y$, said at least one monitor mode control register assigns a number of performance monitor counters, said number of performance monitor counters equal to an integer resulting from dividing Y by X, to each of said events to be counted; and

wherein said at least one monitor control register assigns any unassigned performance monitor counters to at least one of said events.

The examiner relies on the following references:

Gover et al. (Gover)	5,557,548	Sept. 17, 1996
Dharap	US 2002/0026524	Feb. 28, 2002

Claims 1 and 3-5 stand rejected under 35 U.S.C. §103 as unpatentable over Gover and Dharap.

Reference is made to the briefs and answer for the respective positions of appellant and the examiner.

OPINION

In rejecting claims under 35 U.S.C. §103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). The examiner must articulate reasons for the examiner's decision. In re Lee, 277 F.3d 1338, 1342, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002). In particular, the examiner must show that there is a teaching, motivation, or suggestion of a motivation to combine references relied on as evidence of obviousness. Id. at 1343. The examiner cannot simply reach conclusions based on the examiner's own understanding or experience – or on his or her assessment of what would be basic knowledge or common sense. Rather, the examiner must point to some concrete evidence in the record in support of these findings. In re Zurko, 258 F.3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). Thus the examiner must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the examiner's conclusion. However, a suggestion, teaching, or motivation to combine the relevant prior art teachings does not have to be found explicitly in the prior art, as the teaching, motivation, or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references. The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. In re Kahn, 441 F.3d 977, 987-88, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) citing In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313 (Fed. Cir. 2000). See also In re

Thrift, 298 F.3d 1357, 1363, 63 USPQ2d 2002, 2008 (Fed. Cir. 2002). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1040, 228 USPQ 685, 687 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1051, 189 USPQ 143, 146-147 (CCPA 1976). Only those arguments actually made by appellant have been considered in this decision. Arguments which appellant could have made but chose not to make in the brief have not been considered and are deemed to be waived [see 37 CFR §41.37(c)(1)(vii) (2004)].

The examiner applies Gover to the claimed subject matter as set forth at pages 3-5 of the answer. The examiner contends that

Gover teaches many of the features of the claimed invention including that when the number of events (i.e. X) is less than the number of performance monitor counters (i.e. Y), distributing the number of available counting elements across the number of events to be counted to employ serial counting. While it would have been obvious...to perform a conventional division operation in order to distribute the number of performance monitor counters, Gover does not explicitly disclose such a division step (answer-pages 4-5).

Thus, the examiner turns to Dharap, paragraphs 0025-0026, for a teaching of distributing a number of table entries, Y, across the number of available entries, X, when $X < Y$, by dividing the number of table entries Y by the number of available entries X, and assigning a number of table entries, that number being equal to the integer resulting from dividing Y by X, to each of the number of available entries and assigning any unassigned table entries to at least one of the available entries.

The examiner concludes that it would have been obvious to modify Gover “to explicitly disclose a division step, as taught by Dharap, because Dharap suggests a method pertinent to the particular problem of distributing items that would have provided means for correctly, accurately, and evenly assigning the counters to events of Gover” (answer-page 5).

Appellant responds by contending that the combination is improper because Dharap constitutes “nonanalogous art” to Gover. Moreover, appellant argues that Gover, alone, is insufficient for a finding of obviousness because Gover merely teaches that an MMCR can allow control over which PMCs are used to monitor events, and this control enables the ability of certain of the PMCs to be used for overflow of other PMCs, but that this cannot properly be construed as teaching or suggesting the claimed division calculation of the present invention used to optimize the use of the PMCs. See page 3 of the reply brief.

We have reviewed the evidence before us, including the applied prior art and the arguments of appellant and the examiner, and we agree with appellant that Dharap is nonanalogous art to Gover as, in our view, the skilled artisan would not have looked to the display formatting method of Dharap to modify the performance monitoring system of Gover in any way.

The test for analogous art outside an inventor's field of endeavor is whether the art pertains to the particular problem confronting the inventor. In re Clay, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992). Both parties agree that Dharap is outside the inventor's, as well as Gover's, field of endeavor, which is performance monitors within a data processing system. Thus, the question is whether Dharap pertains to the particular problem confronting the inventor. The particular problem confronting the inventor in this case was that the prior art in performance monitors employed interrupt handlers which detected which PMCs caused an exception and then maintained a virtual counter recording overflow history (see page 3 of the specification), but that the inventor sought a hardware solution for increasing the available width of PMCs during initial hardware testing of a processor or when the processor is executing time-sensitive code that cannot be interrupted. Part of appellant's claimed solution involves assigning a number of performance monitor counters when the number of events X is less than the number of performance monitor counters Y so that the number of counters is assigned as an integer calculated "by dividing Y by X" to each of the events to be counted (see claim 1).

It is true that Dharap does disclose a division of a total number of table entries by the number of available entries, in paragraph [0025], which is somewhat analogous to dividing a number of counters by a number of events. However, an artisan in the processor performance monitor arts, ala Gover, would appear to have no reason to look to data displays, ala Dharap, for a division of a number of performance monitor counters by a number of events. The data display of Dharap would appear to have little pertinence to the types of problems appellant and Gover were concerned with.

Accordingly, we cannot subscribe to the examiner's theory that it would have been obvious to combine Gover and Dharap to arrive at the instant claimed subject matter.

If Gover itself, or something within the knowledge of the skilled artisan, suggested dividing a number of performance monitor counters by a number of events, when the number of events is less than the number of performance monitor counters, perhaps there would be a proper rejection under 35 U.S.C. §103.

In fact, the examiner appears to suggest this from the bottom of page 4 to the top of page 5 of the answer:

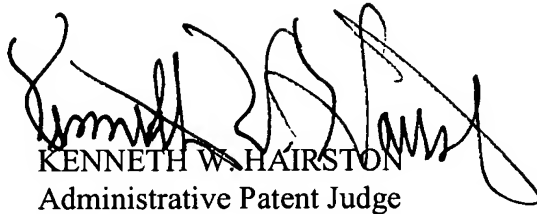
While it would have been obvious...to perform a conventional division operation in order to distribute the number of performance monitor counters, Gover does not explicitly disclose such a division step.

However, the examiner never elucidates on why the examiner feels that the claimed subject matter would have been obvious even without Dharap, and we are left to merely speculate on what this rationale might be.


Accordingly, we will not sustain the rejection of claims 1 and 3-5 under 35 U.S.C. §103 because, in our view, the examiner has not presented a prima facie case of obviousness with regard to the instant claimed subject matter.

The examiner's decision is reversed.

REVERSED


KENNETH W. HAIRSTON
Administrative Patent Judge


ERROL A. KRASS
Administrative Patent Judge


ALLEN R. MACDONALD
Administrative Patent Judge

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EK/gw

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